Space Weather Forecast

Issued on Wednesday, 16 March 2022 at 01:05 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate Solar activity with a chance of further M-flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate over the past 24 hours with a couple of Moderate flares (R1 Radio Blackouts) observed from a sunspot in the north-centre disc. This is a wide region, consisting of a large number of small individual spots. Some development to the north of the region potentially caused instability to occur and the subsequent flare activity. The other sunspot regions on the disc are all small and simple. No Earth-directed coronal mass ejections (CMEs) were observed in available imagery.

Solar Wind / Geomagnetic Activity: Solar wind speeds have been at background to slightly elevated, as the effects of the recent CME arrival receded. The magnetic field carried by the winds eased from Moderate levels to become Weak, with the north-south directed component remaining weak and generally positive (northward) with only brief negative (southward) periods. Geomagnetic activity has been Quiet to Unsettled.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be Low to Moderate, with a chance of further Moderate flares (R1 Radio Blackouts) from the large region near north centre disc.

Solar Wind / Geomagnetic Activity: There is one slow weak CME observed from the south of the Sun on 13 March. This will likely pass under of the Earth, but may give a glancing impact on day 2 (17th). Otherwise background winds are expected. Geomagnetic activity is likely to be predominantly Quiet, with the greatest chance of any significant increases in activity to Active (Kp4) if we do see the weak CME on Day 2 (17th).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to be at background levels with no solar radiation storms, although there is a slight chance of an increase in response to any larger flares that may occur.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	5	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	50	40	30	30
Very Active	R3 to R5 X	No	5	2	2	2

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	2	2	2
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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